

REMARKS

In response to the Office Action mailed January 18, 2002, Applicants have amended claims 1, 16-18, 20, 35-38, 41 and 56, and cancelled claims 15 and 34. Claims 1-14, 16-33, and 35-58 are presented for examination.

Claims 1-19 were rejected under 35 U.S.C. §103(a) unpatentable over Materials Science and Engineering B56 (1998) 209-212 ("Koster") or Jpn. J. Appl. Phys. Vol. 38 (1999) pp. L731-L733 ("Tanaka") in view of U.S. Patent No. 6,022,832 ("Fritzemeier").¹

Claims 1-19, as amended, cover methods that include depositing a layer of material and chemically conditioning a surface of the deposited layer of material, where the material is a buffer material or a superconductor material.

None of the references applied by the Examiner, alone or in combination, disclose or suggest such a method. Rather, these references disclose treating a **substrate**. For example, Koster discloses treating a SrTiO₃ **substrate**, Tanaka discloses treating a single crystal YBCO **substrate**, and Fritzemeier discloses exposing a **substrate** to a conditioning gas. (See, e.g., Koster at 209-212, Tanaka at L731-L733, and Fritzemeier col. 2, lines 49-55 and col. 4, lines 18-28). None of these reference involve depositing a material and chemically conditioning a surface of the deposited layer of the material, where the material is a buffer material or a superconductor material, as required by claims 1-19.

Moreover, there is no suggestion to combine these references to provide the methods covered by claims 1-19. Furthermore, even if the references were combined, the result would not be the methods covered by claims 1-19. Instead, the result would be a method that did not include depositing a material and chemically conditioning a surface of the deposited layer of the material, where the material is a buffer material or a superconductor material. Accordingly, Applicants request reconsideration and withdrawal of the rejection of claims 1-19 under 35 U.S.C. §103(a).

¹ Claim 15 has been cancelled, and so the rejection on this ground should be withdrawn.

Claims 20-58 were rejected 35 U.S.C. §103(a) unpatentable over U.S. Patent No. 5,728,214 ("Konishi").²

As amended, claims 20-58 cover methods that include depositing a layer of material and heating a surface of the deposited layer of material, where the material is a buffer material or a superconductor material.

Konishi does not disclose or suggest such methods. Instead, Konishi discloses heating a single crystal oxide in an environment containing oxygen. (See, e.g., Konishi col. 3, line 52-col. 4, line 17). But, as known to those skilled in the art, Konishi's single crystal oxide is not a deposited layer, as required by claims 20-58. Konishi also discloses growing an epitaxial layer of an oxide by a process that involves sputtering in an oxygen-containing environment. (See, e.g., id. col. 8, lines 39-67). But, the resulting layer is not heated, as required by claims 20-58. Thus, neither of Konishi's methods involve depositing a layer of material and heating a surface of the deposited layer of material, where the material is a buffer material or a superconductor material, as required by claims 20-58.

Nor is there any suggestion to modify Konishi's method to provide the methods covered by claims 20-58. One of Konishi's objects was to provide a method of forming an oxide having a relatively smooth surface. (Id. col. 3, lines 20-35). According to Konishi, his method achieves this goal. (Id. col. 1, lines 4-9 and col. 6, lines 5-8). Thus, after reading Konishi, one skilled in the art would not have been motivated to modify Konishi's method to provide the method covered by claims 20-58.

In view of the foregoing, Applicants request reconsideration and withdrawal of the rejection of claims 20-58 under 35 U.S.C. §103(a).

Claims 34 and 56 were rejected under 35 U.S.C. §112, second paragraph as being indefinite. Applicants have cancelled claim 34, and amended claim 56 to obviate the rejection of this claim. Accordingly, Applicants request reconsideration and withdrawal of the rejection of claims 34 and 56 under 35 U.S.C. §112, second paragraph.

Attached is a marked-up version of the changes being made by the current amendment.

² Claim 34 has been cancelled, and so the rejection on this ground should be withdrawn.

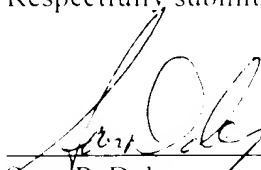
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Applicants believe the application is in condition for allowance, which action is requested. Please apply any charges or credits to Deposit Account No. 06-1050.

Respectfully submitted,

Date: 4/12/02


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Version with markings to show changes made

In the claims

The Claims were amended as follows.

--1. (Once Amended) A method of making a multi-layer article, comprising:
depositing a first material on a surface of a third material to form a deposited layer of the first material, the first material being selected from the group consisting of a buffer material and a superconductor material;

chemically conditioning a surface of [a] the deposited layer of [a] the first material to form a conditioned surface[, the first material comprising a material selected from the group consisting of a buffer material and a superconductor material]; and

disposing a layer of a second material on the conditioned surface.

16. (Once Amended) The method of claim [15] 1, wherein the third material comprises a substrate material.

17. (Once Amended) The method of claim [15] 1, wherein the surface of the layer of the third material is biaxially textured.

18. (Once Amended) The method of claim [15] 1, wherein the third material comprises a single crystal material.

20. (Once Amended) A method of making a multi-layer article, comprising:
depositing a first material on a surface of a third material to form a deposited layer of the first material, the first material being selected from the group consisting of a buffer material and a superconductor material;

heating, at an oxygen gas pressure of less than about 700 Torr, a surface of [a] the deposited layer of [a] the first material to a temperature at least about 5°C above a temperature

selected from the group consisting of a deposition temperature of the layer of the first material and a crystallization temperature of the layer of the first material to form a conditioned surface[, the first material comprising a material selected from the group consisting of a buffer material and a superconductor material]; and

disposing a second material layer on the conditioned surface.

35. (Once Amended) The method of claim [34] 20, wherein the third material comprises a substrate material.

36. (Once Amended) The method of claim [34] 20, wherein the third material comprises a material selected from the group consisting of nickel and silver.

37. (Once Amended) The method of claim [34] 20, wherein the surface of the layer of the third material is biaxially textured.

38. (Once Amended) The method of claim [34] 20, wherein the third material comprises a single crystal material.

41. (Once Amended) A method of making a multi-layer article, comprising:
depositing a first material on a surface of a third material to form a deposited layer of the first material, the first material being selected from the group consisting of a buffer material and a superconductor material;

heating a surface of [a] the deposited layer of [a] the first material to a temperature at least about 5°C above a temperature selected from the group consisting of a deposition temperature of the layer of the first material and a crystallization temperature of the layer of the first material to form a conditioned surface. [the first material comprising a material selected from the group consisting of a buffer material and a superconductor material,] the first material being disposed on a surface of a polycrystalline material; and

disposing a second material layer on the conditioned surface.

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56. (Once Amended) The method of claim [20] 55, wherein [of] the environment further comprises hydrogen and an inert gas.--